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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/801,561	03/07/2001	Edison T. Hudson	INFO-002	5358

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EXAMINER	
JELINEK, BRIAN J	

ART UNIT	PAPER NUMBER
2615	9

DATE MAILED: 06/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/801,561	HUDSON ET AL.	
	Examiner	Art Unit	
	Brian Jelinek	2615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-10 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-10 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 07 March 2001 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 6,7, and 8.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

This is a first office action in response to application no. 09/801,561 filed on 3/7/2001 in which claims 1-10 are presented for examination.

Specification

The specification is objected to because of the following informalities: element 114 in Fig. 1 is not described in the specification. Appropriate correction is required

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-5 are rejected under 35 U.S.C. 102(e) as being anticipated by DeCarlo (U.S. Pat. No. 5,903,662).

Regarding claim 1, DeCarlo teaches a method for obtaining electronic images with a single imager of a substrate location and a component to be placed on the substrate location, said method comprising: placing a component above a substrate location (col. 3, lines 60-62). Furthermore, DeCarlo teaches interposing a movable

imager body between the substrate location and the component; capturing the image of the component and substrate location; and retracting the imager body from between the substrate location and the component (Figs. 7 and 8, element 112; col. 9, lines 54-59 and 64-66). Further still, DeCarlo teaches the imager body includes a moveable reflector (Fig. 1, element 54; col. 5, lines 27-34); moving a reflector to reflect an image from the substrate location into the imager (col. 5, lines 29-34); and moving the reflector to reflect an image from the component into the imager (col. 5, lines 29-34).

Regarding claim 2, DeCarlo teaches a method for accurately placing a component on a substrate location, said method comprising: picking a component (col. 4, lines 9-14); transporting the component to a location above a substrate location (col. 3, lines 60-62). Furthermore, DeCarlo teaches interposing a movable imager body between the substrate location and the component; capturing the image of the component and the substrate location; and retracting the imager body from between the substrate location and the component; and placing the component on the substrate location (Figs. 7 and 8, element 112; col. 9, lines 54-59; col. 9, line 64-col. 10, line 1). Further still, DeCarlo teaches the imager body includes a moveable reflector (Fig. 1, element 54; col. 5, lines 27-34); moving the reflector to reflect an image from the component into the imager (col. 5, lines 29-34); and moving the reflector to reflect an image from the substrate location into the imager (col. 5, lines 29-34).

Regarding claim 3, DeCarlo teaches an apparatus for obtaining electronic images with a single imager of a substrate location and a component to be placed on the substrate location, said apparatus comprising: a means for placing the component

above the substrate location (col. 3, lines 60-62). Furthermore, DeCarlo teaches a means for interposing a movable imager body between the substrate location and the component; means for capturing the image of the component and of the substrate location; and means for retracting the imager body from between the substrate location and the component (Figs. 7 and 8, element 112; col. 9, lines 54-59; col. 9, line 64-col. 10, line 1). Further still, DeCarlo teaches the imager body including a moveable reflector (Fig. 1, element 54; col. 5, lines 27-34); means for moving the reflector to reflect an image from the component into the imager (col. 5, lines 29-34); means for moving the reflector to reflect an image from the substrate location into the imager (col. 5, lines 29-34).

Regarding claim 4, DeCarlo teaches an apparatus for accurately placing a component on a substrate location, said apparatus comprising: means for picking the component (col. 4, lines 9-14); and means for transporting the component to a location above the substrate location (col. 3, lines 60-62). Furthermore, DeCarlo teaches a means for interposing a movable imager body between the substrate location and the component; means for capturing the image of the component and of the substrate location; means for retracting the imager body from between the substrate location and the component; and means for placing the component on the substrate location. (Figs. 7 and 8, element 112; col. 9, lines 54-59; col. 9, line 64-col. 10, line 1). Further still, DeCarlo teaches an imager body including a moveable reflector (Fig. 1, element 54; col. 5, lines 27-34); means for moving the reflector to reflect an image from the component

into the imager (col. 5, lines 29-34); and means for moving the reflector to reflect an image from the substrate location into the imager (col. 5, lines 29-34).

Regarding claim 5, DeCarlo teaches a single camera system using up/down optics for component to substrate registration, said system comprising: a placement machine (Fig. 11A); a pick-up head transportable in X, Y, Z and T directions (col. 4, lines 20-22 and 27-30), the pick-up head for picking up a component to be placed at a selected location of the substrate (col. 3, lines 60-62); an imager body including an imaging sensor mounted to the placement machine so that it can be disposed between a component held by the pick-up head and the selected location of the substrate and then withdrawn (Figs. 7 and 8, element 112; col. 9, lines 54-59; col. 9, line 64-col. 10, line 1). Furthermore, DeCarlo teaches a moveable reflector disposed on the imager body (Fig. 1, element 54; col. 5, lines 27-34); the moveable reflector moveable between a position where an image of the component disposed above the imager body is reflected into the imaging sensor (col. 5, lines 29-34); and a position where an image of the selected location of the substrate is reflected into the imaging sensor (col. 5, lines 29-34).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 6, and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over DeCarlo (U.S. Pat. No. 5,903,662) in view of examiner's Official Notice.

Regarding claims 6 and 7, DeCarlo teaches a CCD camera for imaging a component and a surface on which to place the component (col. 5, lines 36-40). DeCarlo does not explain in detail the specifics of the CCD sensor. However, the examiner takes Official Notice that it is well known in the art to configure a CCD camera sensor as either an area or linear array-type imager, each being a well-known and obvious variation of the other. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide either an area or linear array-type CCD in the camera of DeCarlo since both are well known configurations for CCD image sensors.

Claims 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over DeCarlo (U.S. Pat. No. 5,903,662) in view of Freeman (European Pat. App. No. 89304037.8).

Regarding claim 8, DeCarlo teaches that a reflector can be laterally interposed between a component and a surface (Figs. 7 and 8, element 112; col. 9, lines 54-59; col. 9, line 64-col. 10, line 1). DeCarlo does not teach that the reflector is capable of being rotated.

However, Freeman teaches a retractable video probe comprising a reflector that rotates for alternatively viewing a circuit board and a stencil (Fig. 4; Fig. 4, elements 32 and 32A; col. 2, lines 22-36; col. 5, line 41).

DeCarlo's movable optics have a low optical efficiency (~50%) since the image light beam is split by the reflector before reaching a camera. It is clear that by configuring the reflector of DeCarlo to be a full mirror that is rotatable (as taught by Freeman) a much higher optical efficiency (~100%) would be achieved since Freeman's reflector does not divide the image light. As a result, it would have been obvious to one of ordinary skill in the art at the time of the invention to configure DeCarlo so as to have a rotatable mirror in order to increase the level of the image reaching the camera.

Regarding claim 9, Freeman teaches a reflector rotates in a range of about 45 degrees to about 225 degrees (col. 5, lines 47-51).

Regarding claim 10, Freeman teaches a reflector comprises a mirror (Fig. 4, element 32A; col. 5, line 42).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian Jelinek whose telephone number is (703) 305-4724. The examiner can normally be reached on M-F 8:00 am - 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Christensen can be reached on (703) 308-9644. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Brian Jelinek
6/11//2004

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